

CLAIMS

What is claimed is:

1. An imageable element comprising:

a substrate;

5 an underlayer over the substrate;

a top layer over the underlayer;

in which:

the element comprises a photothermal conversion material;

the top layer is substantially free of the photothermal conversion material;

10 the top layer is ink receptive;

before thermal imaging, the top layer is not removable by an alkaline developer;

after thermal imaging to form imaged regions in the top layer, the imaged regions are removable by the alkaline developer;

15 the top layer comprises a binder and an ionic liquid;

the binder is selected from the group consisting of poly(methyl methacrylate); copolymers of methyl methacrylate with other acrylate or methacrylate monomers; polystyrene; copolymers of styrene with acrylate and methacrylate monomers; polyesters, polyamides, polyureas, polyurethanes,
20 epoxy resins, and combinations thereof; and

the underlayer is removable by the alkaline developer.

2. The imageable element of claim 1 in which the binder is selected from the group consisting of acrylic and methacrylic polymers and copolymers, polystyrene; and copolymers of styrene with acrylate and methacrylate
25 monomers.

3. The element of claim 2 in which the binder is poly(methyl methacrylate).

4. The element of claim 3 in which the ionic liquid comprises an imidazolium cation.

5. The element of claim 3 in which the underlayer comprises the photothermal conversion material.

5 6. The element of claim 3 in which:

the element additionally comprises an absorber layer between the underlayer and the top layer; and

the absorber layer comprises the photothermal conversion material.

7. The element of claim 1 in which the top layer comprises about
10 1 wt% to about 20 wt% of the ionic liquid, based on the dry weight of the top layer.

8. The element of claim 7 in which the binder is poly(methyl methacrylate).

9. The element of claim 8 in which the ionic liquid has a melting point
15 of less than 70°C.

10. The element of claim 8 in which the ionic liquid has a melting point of less than 50°C.

11. The element of claim 1 in which the ionic liquid comprises a cation selected from the group consisting of imidazolium cations, pyridinium cations,
20 pyrrolidinium cations, phosphonium cations, and tetralkylammonium cations.

12. The element of claim 11 in which the ionic liquid comprises an imidazolium cation.

13. The element of claim 12 in which the binder is poly(methyl methacrylate).

25 14. The element of claim 1 in which the ionic liquid has a melting point of less than 70°C.

15. A method for forming an image, the method comprising the steps of:

a) thermally imaging an imageable element and forming an imaged imageable element comprising imaged and complementary unimaged regions;

5 the imageable element comprising:

a substrate;

an underlayer over the substrate;

a top layer over the underlayer;

in which:

10 the element comprises a photothermal conversion material;

the top layer is substantially free of the photothermal conversion material;

the top layer is ink receptive;

15 before thermal imaging, the top layer is not removable by an alkaline developer;

after thermal imaging to form imaged regions in the top layer, the imaged regions are removable by the alkaline developer;

the top layer comprises a binder and an ionic liquid;

20 the binder is selected from the group consisting of poly(methyl methacrylate); copolymers of methyl methacrylate with other acrylate or methacrylate monomers; polystyrene; copolymers of styrene with acrylate and methacrylate monomers; polyesters, polyamides, polyureas, polyurethanes, epoxy resins, and combinations thereof; and

the underlayer is removable by the alkaline developer; and

25 b) developing the imaged imageable element with the alkaline developer and removing the imaged regions without substantially affecting the unimaged regions.

16. The method of claim 15 in which the binder is poly(methyl methacrylate).

17. The method of claim 16 in which the alkaline developer is an aqueous alkaline developer.

5 18. The method of claim 16 in which the alkaline developer is a solvent based developer.

19. The method of claim 18 in which the ionic liquid has a melting point of less than 70°C.

10 20. The method of claim 19 in which the ionic liquid comprises an imidazolium cation.